Gabriele Dragotto

Data X Fellow and Postdoctoral Research Associate

Department of Operations Research and Financial Engineering, Center for Statistics and Machine Learning, Princeton University 325 Sherrerd Hall, Princeton, NJ 08544, USA

Education

Ph.D. in Mathematics Polytechnique Montréal	Montréal, Canada
Canada Excellence Research Chair in Data Science for Real-time Decision-Making, Gerad and CIRRELT	Jan 2019 - Feb 2022
Thesis: "Mathematical Programming Games " Best Thesis Award 2022 - Département de mathématiques et de génie industriel Advisor: Dr. Andrea Lodi	
B.Sc in Engineering and Management Politecnico di Torino	Torino, Italy
Department of Management and Production Engineering	Sep 2015 – Mar 2018
Thesis: "Introducing Fairness and Diversification in WTA and ATP Tennis Tournaments Generation" Scholarship: <i>Giovani Talenti (top 2% university-wide)</i> Graduated ahead (a semester) of the standard schedule Erasmus Scholarship: Tampere University of Technology, Finland	

Experience

Postdoctoral Research Associate, 2023 Data X Postdoctoral Fellow, Lecturer Princeton University	Princeton (NJ), U.S.
Department of Operations Research and Financial Engineering and Center for Statistics and Machine Learning	Sep 2022 – June 2024
Associated with the Department of Electrical and Computer Engineering Lecturer for the Center for Statistics and Machine Learning Funded by the Metropolis Project (2022) and the CSML Data X Project (from Sept. 2023) Advisors: Dr. Bartolomeo Stellato and Dr. Jaime Fisac	
Researcher Polytechnique Montréal	Montréal, Canada
Canada Excellence Research Chair in Data Science for Real-time Decision Making	
Co P.I. of "Game-Theoretic Security Posture Modeling for Cloud Applications" with Ericsson Canada Inc. Provisional US Patent and Invention Disclosure - Main inventor Industrial funding awarded: 50.000 \$CAD Visiting Researcher, Spring 2022 - Cornell Tech (USA)	
Assistant Researcher Politecnico di Torino	Torino, Italy
Department of Management and Industrial Engineering	Apr 2018 – Dec 2019
Project: "Models and Algorithms of Mathematical Programming and Artificial Intelligence for problems of Combinatorial Design" Advisors: Dr. Federico Della Croce and Dr. Fabio Salassa	

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Gabriele Dragotto - Vitae

Innovation Engineer | CEAN S.p.A.

CEAN Color

CEAN IT

Trofarello, Italy

Summer 2013, 2014

Project Manager: Salesforce CRM, ERP systems, Asana Performance Evaluation Founder of Cean Color, a creative department now employing 10+ people Organizer of the Google Startup Weekend Retail Torino 2016 Creator of CEAN360 for iOS

Summer Intern | CEAN S.p.A.

Data Collection Manager - Small and medium-sized stores

Awards, Prizes, and Grants

PDC Fall Seminar Series 2022 Winning Speaker Princeton Postdoctoral Council - Princeton University	Jan 2023		
 Best Thesis Award 2022 - Département de mathématiques et de génie industriel <i>"Mathematical Programming Games" - Polytechnique Montréal</i> 	Feb 2023		
• The 2023 Data X Postdoctoral Fellowship - Center for Statistics and Machine Learning (CSML) "Multi-agent Data-driven Decision-making" - Princeton University	2023		
• Doctoral Excellence Scholarship CIRRELT (Canada)	2021-2022		
 Best Presentation Award - "When Nash meets Stackelberg" AIRO Young - the young chapter of the Italian Operations Research Society (AIRO) 	Feb 2021		
 Poster Finalist, Travel Award - "When Nash meets Stackelberg" Mixed Integer Programming Workshop 	May 2020		
• Erasmus Scholarship Politecnico di Torino and Tampere University of Technology	2017		
• "Giovani Talenti" Scholarship Politecnico di Torino	2015-2018		
Industrial Grants			
• Assortment Optimization (P.I.) Gruppo PAM S.p.a.	2022		
• Game Theoretic Security Posture Modeling for Cloud Applications (co-P.I. \$50.000 CAD) <i>Ericsson Canada Inc.</i>	Mar-Sept 2022		
Patents and Intellectual Property			
• Game Theoretic Security Posture Modelling for Cloud Applications (Provisional, Main Inventor) Ericsson Canada Inc.	Jan 2023		

Publications

Pre-prints and Submitted Manuscripts

- Aloïs Duguet, Margarida Carvalho, Gabriele Dragotto, and Sandra Ulrich Ngueveu. "Computing Approximate Nash Equilibria for Integer Programming Games". In: *arXiv* abs/2402.04250 (2023)
- Gabriele Dragotto, Haimin Hu, Jaime Fernández Fisac, and Bartolomeo Stellato. "Who Plays First? Optimizing the Order of Play in Stackelberg Games with Many Robots". In: *arXiv* abs/2402.09246 (2023)
- Gabriele Dragotto, Stefan Clarke, Jaime Fernández Fisac, and Bartolomeo Stellato. "Differentiable Cutting-plane Layers for Mixedinteger Linear Optimization". In: *arXiv* abs/2311.03350 (2023)
- Margarida Carvalho, Gabriele Dragotto, Andrea Lodi, and Sriram Sankaranarayanan. "The Cut and Play Algorithm: Computing Nash Equilibria via Outer Approximations". In: *arXiv* abs/2111.05726 (2021)

Journal Articles

- Gabriele Dragotto, Amine Boukhtouta, Andrea Lodi, and Mehdi Taobane. "The Critical Node Game". In: *Journal of Combinatorial Optimization* to appear (2024). (Provisional Patent)
- Margarida Carvalho, Gabriele Dragotto, Felipe Feijoo, Andrea Lodi, and Sriram Sankaranarayanan. "When Nash Meets Stackelberg". In: *Management Science (forthcoming)* (2023)
- Gabriele Dragotto and Rosario Scatamacchia. "The Zero Regrets Algorithm: Optimizing over Pure Nash Equilibria via Integer Programming". In: INFORMS Journal on Computing 35.5 (2023), pp. 1143–1160
- Margarida Carvalho, Gabriele Dragotto, Andrea Lodi, and Sriram Sankaranarayanan. "Integer Programming Games: A Gentle Computational Overview". In: *INFORMS Tutorials in Operations Research (forthcoming)* (2023)
- Federico Della Croce, Gabriele Dragotto, and Rosario Scatamacchia. "On fairness and diversification in WTA and ATP tennis tournaments generation". In: Annals of Operations Research 316.2 (Sept. 2022), pp. 1107–1119. ISSN: 0254-5330, 1572-9338
- Fabio Salassa, Gabriele Dragotto, Tommaso Traetta, Marco Buratti, and Federico Della Croce. "Merging Combinatorial Design and Optimization: the Oberwolfach Problem". In: *Australasian Journal of Combinatorics* 79.1 (2021), pp. 141–166

Conference Proceedings

• Stefan Clarke, Gabriele Dragotto, Jaime Fernández Fisac, and Bartolomeo Stellato. "Learning Rationality in Potential Games". In: *IEEE Conference on Decision and Control (CDC)*. 2023

Technical Reports

• Gabriele Dragotto, Sriram Sankaranarayanan, Margarida Carvalho, and Andrea Lodi. "ZERO: Playing Mathematical Programming Games". In: *arXiv* abs/2111.07932 (2021)

Selected Talks

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partial	set of slides is available at https://dragotto.net/publications.	
•	INFORMS Optimization Society 2024 <i>Rice University</i> , USA <i>Who Plays Fisrt?</i>	Mar 2024
٠	CISS 2024 Princeton University, USA Differentiable Cutting-plane Layers for Mixed- integer Linear Optimization	Mar 2024
٠	Rutgers Management Sciences and Information Systems Seminar <i>Rutgers University</i> , USA Tutorial: Integer Programming Games, a Gentle Computational Overview	Feb 2024

•	INFORMS 2023 Phoenix, USA Tutorial: Integer Programming Games, a Gentle Computational Overview	Oct 2023
•	INFORMS 2023 Phoenix, USA Who Plays First?	Oct 2023
•	Algorithmic Optimization (ALOP) Colloquium <i>University of Trier</i> , Germany Learn-and-Play: Data, Agents, and Interactions	Jul 2023
•	Operations Research Days <i>Politecnico di Torino</i> , Italy Integer Programming Games: What, Why, and How?	Jul 2023
•	13th Day on Computational Game Theory <i>Vrije Universiteit Amsterdam</i> , Netherlands Integer Programming Games: Do You Really Need Them?	June 2023
•	SIAM Conference on Optimization <i>Seattle</i> , USA Learn-and-Play: From Data to Complex Interventions	May 2023
•	Games, Learning and Networks IMS-NUS, Singapore Learn-and-Play: From Data to Complex Interventions	Apr 2023
•	Dagstuhl Seminar "Optimization at the Second Level" <i>Schloss Dagstuhl</i> , Germany Integer Programming Games (and Robust Optimization)	Nov 2022
•	INFORMS 2022 Indianapolis, USA Mathematical Programming Games	Oct 2022
•	Princeton Optimization Seminar and ECE Korhammer Seminar Series <i>Princeton University</i> , USA Mathematical Programming Games	May 2022
•	EURO 2021 University of West Attica, Greece On Mixed-Integer Programming Equilibria	Jul 2021
•	AIRO Young 2021 Università Federico II (Virtual), Italy When Nash Meets Stackelberg	Feb 2021
•	Mixed-Integer Programming Workshop 2020 <i>Rutgers University (Virtual, Oral Poster)</i> When Nash Meets Stackelberg	May 2020
•	Aussois Combinatorial Optimization Workshop 2020 <i>Aussois, France (Oral Pitch)</i> When Nash Meets Stackelberg	Jan 2020
•	Optimization Days 2019 HEC Montréal, Canada The Oberwolfach Problem	May 2019
•	EURO 2018 Universitat de València, Spain On fairness and diversification in WTA and ATP tennis tournaments generation	Jul 2018

Teaching

SML310 - Research Projects in Data Science Princeton University	Princeton, NJ, USA
Center for Statistics and Machine Learning - 12 Students	Fall 2023 - Winter 2024
Lecturer	
MTH6404 - Integer Programming Polytechnique Montréal	Montréal, Canada
Department of Mathematics and Industrial Engineering - 35 Students	Winter 2021
Design of quizzes, exams, counseling, and grading	
Economics, Branding, and Strategic Management IIS Majorana	Moncalieri, Italy
High-school Course - 35 Students	Spring 2016, 2017
Elective High-school course: a primer on selected topics, joint with CEAN S.p.A. Lectures available lectures	
 MTH6404 - Integer Programming Polytechnique Montréal Department of Mathematics and Industrial Engineering - 35 Students Design of quizzes, exams, counseling, and grading Economics, Branding, and Strategic Management IIS Majorana High-school Course - 35 Students Elective High-school course: a primer on selected topics, joint with CEAN S.p.A. Lectures available lectures 	Montréal, Canada Winter 2021 Moncalieri, Italy Spring 2016, 2017

Advising and Mentoring

۰	Stefan Clarke (Ph.D. candidate) <i>Princeton University</i> , USA Project: Multi-agent Optimization	Fall 2022 - Pres.
۰	Aloïs Duguet (Ph.D. candidate) Laboratory for Analysis and Architecture of Systems, France Project: Approximate Nash Equilibria in Integer Programming Games	Fall 2022 - Pres.
٠	Matthew Dwight Houston (B.Sc. student) <i>Polytechnique Montréal</i> , Canada Project: A multi-leader multi-follower model for vaccine trades in the pandemic	Summer 2021
Mentorir	ng	

• Two Undisclosed Ph.D. Students | *MyPhDMentor, Comitato Dottorato*, Italy

Fall 2022 - Pres.

Service

Societies	Mathematical Optimization Society (MOS), Institute for Operations Research and Management Science (INFORMS), Society of Industrial and Applied Mathematics (SIAM)
Review	Mathematical Programming, INFORMS Journal on Computing, International Conference on Integer Programming and Combinatorial Optimization (IPCO) 2023, European Journal on Operations Research, AAAI 2023, Automatica, Learning for Decision and Control (L4DC) 2023, Annals of Operations Research, Information Systems and Operational Research
Conferences	DS4DM Coffee Talks, Founder and Organizer (2021-2022) MAPSP 2022 - The 15th Workshop on Models and Algorithms for Planning and Scheduling, Organizing Committee DS4DM Workshop 2022 - Workshop on Data-Science for Real-time Decision-making, Organizing Committee

Languages and Coding

Languages	Italian (native), English (fluent), German (Elementary), and French (Elementary)
Coding	Bash, C++, CSS, HTML, Javascript, Java, Julia, Lua, Python, PHP, SQL

Activities

Volunteering	TEDxTorino co-presenter (Jan 2018), Area_G Torino, MyPhDMentor - Comitato Dottorato
High-school Service	Introduced the Student Union Fund (raised more than 5000€), introduced and set up common student lounges, organizer of fundraising events, founder of M1 Online (Student e-newspaper), developer of the iOS and Android App, school website's developer.
OpenSource Education	My lecture notes are available online

Press

•	La Stampa, National Frontpage "Politecnico finds the Tennis' algorithm"	Apr 2018
•	MATEPrism, Bocconi University, Italy "The Mathematics of Tennis"	Apr 2018
•	La Repubblica, D, Italy "20 Successful 20 Years Old"	May 2016